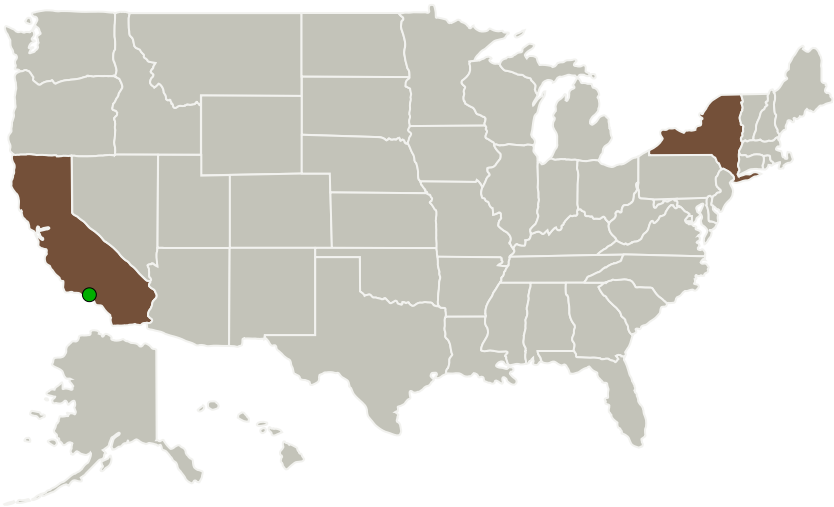
Nephelometric Dropsonde for Volcanic Ash, Phase I

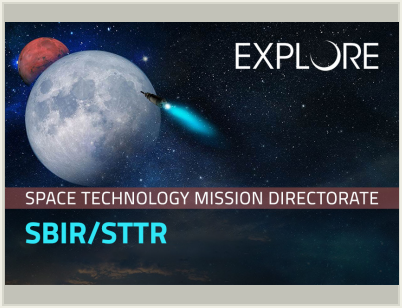
Completed Technology Project (2011 - 2011)

Project Introduction

Advanced dropsondes that could effectively be guided through atmospheric regions of interest such as volcanic plumes could enable unprecedented observations of important atmospheric phenomena. Innovative Dynamics, Inc. proposes to develop a flight ready optical sensor package to provide hazardous volcanic ash and particulate information within commercial airspace. The probe will initially be used as a dropsonde from a UAV but eventually be carried by all aircraft. This volcanic ash particulate information would then be incorporated into standard E-PIREP reports as well as distributed via air traffic controllers. The innovation is a new capability for making in-situ measurement of cloud particulates to improve pilot awareness of hazardous operating conditions, such as those recently experienced by aircraft engines operating in the North Atlantic near Iceland. Cloud and Ash particulate information is currently obtained by positioning a satellite to a location, produces limited data, and is cost prohibitive. IDI proposes to develop a flight deployable optical probe which will determine various airborne particulates such as volcanic ash particle size and density. The probe packaging will be developed to be compatible with existing RQ-4 dropsonde hardware, will be low-cost, low-weight and will be able to be deployed on various platforms, i.e., radiosondes and other payload recovery vehicles.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Innovative Dynamics, Inc.	Lead Organization	Industry	Ithaca, New York
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations	
California	New York

Project Transitions

February 2011: Project Start

August 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140662)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Innovative Dynamics, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

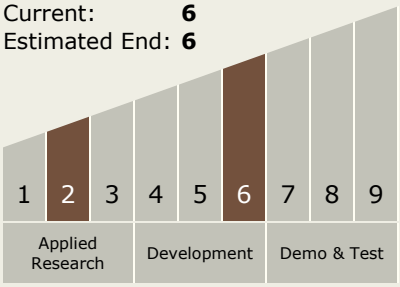
Carlos Torrez

Principal Investigator:

Jack Edmonds

Technology Maturity (TRL)

Start: **2**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System